

Etiology based study of hypertension in an Ayurvedic approach

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ABSTRACT

Ayurveda symbolises holistic approach towards treating diseases and better prevention than cure as its one of the main motto¹. In present paper, etiological based survey of 30 patients was carried out to assess dietary and habitual lifestyles of people suffering from hypertension, for this a detailed proforma based on classical etiological factors related to hypertension was used. After the detailed assessment it was found that, more percentage of etiological factors of Raktavaha Srotas (micro channels for the transportation of blood) (78.46%), Rasavaha Srotas (micro channels for the transport of chyme) (53.33%) were found influenced than that of Manovaha Srotas (micro channels for the conveyance of psyche) (27.67%) and Medovaha Srotas (micro channels transporting of fats) (37.76%). Hence, it can be concluded that avoidance of these etiologies (Nidanaparivarjana) is a first step in the direction of control and management of hypertension.

Introduction:

With nearly 100-million affected people, India is on the verge of becoming the "heart disease capital of the world", experts warn today. Cardiovascular disease is the world's leading killer, accounting for 16.7 million or 29.2 percent of total global deaths in 2003. With modernization, a large proportion of Asians are trading healthy traditional diets for fatty foods, physical jobs for deskbound sloth, the relative calm of the countryside for the stressful city. Heart-attack victims are just the first wave of a swelling population of Asians with heart problems. While deaths from heart attacks have declined more than 50 percent since the 1960s in many industrialized countries, 80 per cent of global cardiovascular diseases related deaths now occur in low and middle-income nation, which covers most countries in Asia.

In India in the past five decades, rates of coronary disease among urban populations have risen from 4 percent to 11 percent. In urban China, the death rate from coronary disease rose by 53.4 percent from 1988 to 1996. According to recent estimates, cases of CVD (Cardio vascular diseases) may increase from about 2.9 crore in 2000 to as many as 6.4 crore in 2015. Deaths from CVD will also be more than double. Most of this increase will occur on account of coronary heart disease AMI (Acute myocardial Infarction), Angina, CHF (Chronic heart failure) and inflammatory heart disease^[2]. The World Health Organization (WHO) estimates that 60 % of the world's cardiac patients will be Indian by 2010^[3]. In 2000, for example, India lost more than five times as many years of economically productive life to cardiovascular disease than did the U.S., where most of those killed by heart disease are above retirement age.

Ayurveda symbolises holistic approach towards treating diseases and better prevention than cure as one of its main motto^[4]. In the present paper, an etiological based special survey^[5] was carried out to assess the dietary and habitual lifestyles of people suffering from hypertension.

Material and methods:

A survey was carried out on patients attending OPD and IPD of Dept. of Rasashastra & Bhaishajya Kalpana including drug research, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar. The patients suffering from essential Hypertension were enrolled for the present work. A total of 30 patients were examined thoroughly based on a special proforma prepared on the basis of *Aharaja, Viharaja and Manashika Nidanas* (Etiologies related to dietary habits, various exercises including walking, jogging etc. and psychological behaviour). *Caraka Samhita, Susruta Samhita, Ashtanga Samgraha and Madhava Nidana* (Basic classics of Ayurveda) were referred for enlisting the etiological factors.(Appendix-I) Etiological factors for the vitiation of *Rakta Dhatu* as mentioned in *Vidhishonatiya Adhyaya of Caraka*^[6] has been taken as basis for examination. Other *Hetus* (etiological factors) pertaining to *Hridroga* (Cardiac disorders) have also been incorporated from the above mentioned texts. *Ashavidha and Dashavidha Parikshana* (eight and ten specific examination methods adopted by Vaidyas) were also carried out.

Discussion:

All countries of the world are currently in different stages of demographic and developmental transition. The pace of this transition has been particularly marked in countries of the so-called Third World, especially in recent times. Modern advances in science and in information and communication technologies on the one hand, and the policies of globalisation and 'economic liberalisation', which many developing countries have now opted for, on the other, have served to accelerate the pace of these changes. In India, far-reaching changes affecting the lives of millions of people are now being brought about as part of this developmental transition. The major attributes of developmental transition are: urbanisation, changes in occupational pattern, changes in family structure, change in life-style and value systems, changes in dietary practices, environmental degradation, and progressive ageing of populations. All these attributes have had important effects on the overall pattern of morbidity in the population. The population of India which stood at 360 million in 1950 is now approaching a billion; alongside with this increase, there has also been a slow and progressive ageing of the population resulting in a marked

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Increase in the proportion and absolute numbers of the population liable to chronic diseases of adulthood and old age^[7]. The concurrent control of infectious diseases has also contributed to this striking change in the morbidity profile^[8]. Chronic degenerative diseases are now emerging as the major causes of morbidity and mortality^[9]. This ascendancy of chronic degenerative diseases implies a vastly greater loss of productivity and vastly greater expense with regard to health care of the nation as a whole^[10].

According to *Ayurveda Mana* (mind) and *Purusha* (body) both are evolved and nourished from food. If food is un-homologous then it will cause imbalance in both *Manas* and *Sarira Doshas* resulting in many diseases^[11]. Hypertension is one of the diseases which are the outcomes of such a faulty food regimen and life style accepted across generations and entered in genetic predisposition group unknowingly which now-a-days is being called as X-syndrome (*Beeja Dosa* or *Santana Dosa*)^[12]. In the present study 33.33 % patients have shown positive family history.

Age is an important factor in the manifestation of the disease because hypertension is found mostly in the middle and senile age group^[13]. Age factor modifies the course of essential hypertension^[14]. The younger the patient when hypertension is first noted, the greater is the reduction in life expectancy if the hypertension is left untreated^[15]. In Ayurvedic classics, the *Vayas* (Age) has been implied as an important factor in the manifestation of the diseases and in the prognosis of the disease^[16]. As the hypertension generally occurs in middle and senile age, it can be said that the disease is mainly related to *Vata* and *Pitta* dominance^[17] (As.H.Su.1/8), because the susceptibility of body towards *Dosha* dominance, changes according to the age. In the present study, 40 % patients belonged to the age group of 40-50 years. This age group has *Pitta* dominance and hence excess indulgence of *Pitta* vitiating factors may provoke

Rakta Dushti (*Ashrayashrayi Bhava*)(Mutually Supporting factors). On the other hand, if the dominance of *Doshas* in hypertension is not according to the age, then the management of hypertension can become easy^[18].

Table 1. shows the gradation of hypertension prevalent in the present study. It is evident that maximum patients were in Stage I and stage II.

The *Nidana Sevana* (Table No.2) was assessed on the basis of quantity and frequency of consumption. The present study revealed that maximum i.e. 50% patients were having *Atividahi Ahara*(Foods that cause excessive burning sensation), 36.67% patient had *Lavana Rasa*(Salty) predominantly in their diet, followed by 33.33% patient having *Kshara* and 16.67% *Amla Rasa* dominance in their food. Nowadays the spicy food has become a common food habit in the society. These *Rasas* may work as an etiological factor for the disease hypertension by increasing *Vata* and *Pitta Dosa* and vitiating the *Rakta Dhatu*^[20]. Out of the *Aharaja Nidanas* like Chinese, Punjabi, Pizza and South Indian snacks are present in the routine diet of a civil person, these diets are dominated with *Snigdha*(Unctuous), *Vidahi*, *Guru*(heavy), *Sthira Gunas*(Stable Qualities) in the body and simultaneously vitiates respective *Dosas*^[21]. The vitiation of these fractions ultimately leads to *Margavarodha of Vata*, aggravates and vitiates further the *Vata Dosa* and *Dhatu* respectively. Here the type of *Margavarodha* (Obstruction) can be concluded as *margavarodha of Sama Vayu* by aggravated and vitiating *Dosa* and *Dushya*. All these factors come under *Asatmyendriyarthasamyoga*(improper correlation of the Sense Organs) and *Pragyaparadha* (Erroneous Way of Life) and afflict both body and mind because the *Chala Guna*(Continuously Moving) of *Vata* is totally responsible for maintenance of circulation. *Tama Pradhana Ahara*(Foods predominant with *Tamas*) may affect the same^[22]. All *Rakta Dushtikara Nidanas*

Graph 1: General observations as made in 30 patients of hypertension

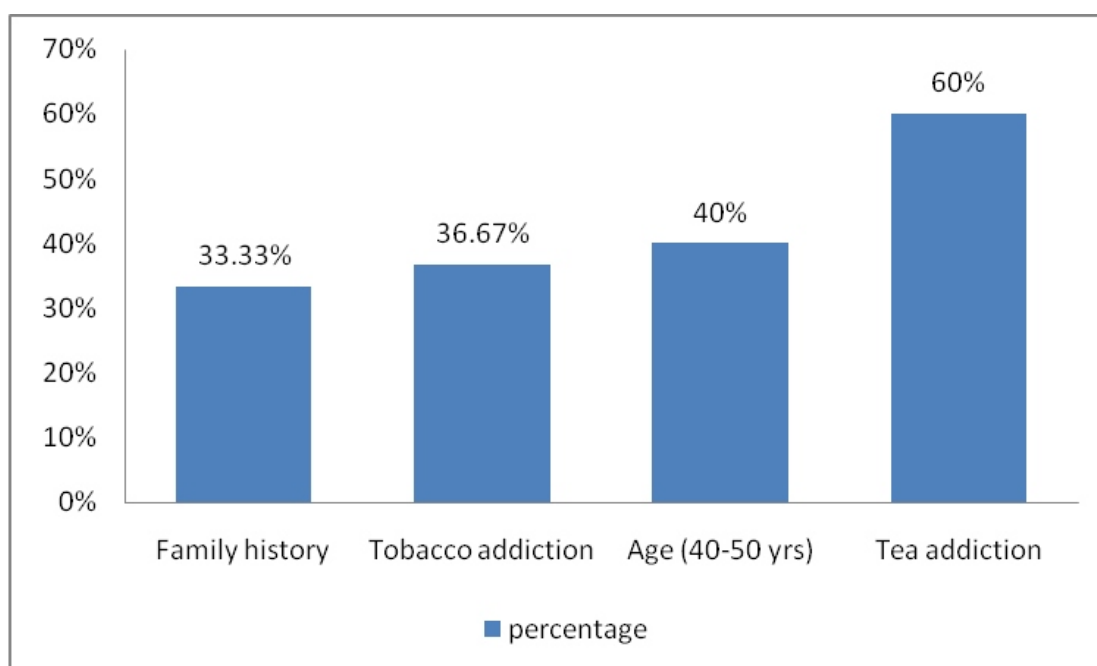


Table 1: Showing the number of patients in various grades of hypertension¹⁹

Diastolic pressure	Grade	Number of patients	Systolic pressure	Grading	Number of patients
85 – 89	High-Normal	3	130 – 139	High Normal	4
90-99	Stage 1 Hypertension	11	140 -159	Stage 1 Hypertension	14
100-109	Stage 2 Hypertension	12	160 – 179	Stage 2 Hypertension	9
110 <	Stage 3 Hypertension	4	180 <	Stage 3 Hypertension	3

I.e. *Vishamashana*, excessive intake of salt (*Tathati Lavana Ksharaihi*)^[23], excessive fatty diet (*Ati-Snigdha Ahara*), *Gathiya*-pieces of Papaya (*Malina Ahara*) are common in the diet of Gujarati people. Punjabi, Chinese, and South Indian food, are not used in proper quantity and violation of regional dietary customs, are also becoming common in the vegetarian group. Caraka has specially quoted that people (*Janapada*) of *Saurashtra and Bahlika* (Regions towards northwest frontiers of India) consume more salt in their diet^[24]. This type of diet aggravates *Doshas* and does the further progress in the pathophysiology of hypertension. 16.67% patients having *Viruddha Ahara* which is the main cause of *Raktapradosaja Vyadhis*^[25] (Diseases due to Vitiation of blood) as well as *Santana Dosa*^[26] (Difficulty in begetting children), indicates the involvement of *Rakta* and genetic predominance in hypertension. *Mada and Murcha* (Fainting) quoted in *Vidhishonitiya Adhyaya* of *Caraka Samhita*^[27] are the post leads of *Viruddha Ahara* as well as hypertension. Thus, *Viruddha Ahara* can be one of the etiological factors in the manifestation of hypertension. These are all the classical *Hetus*, the *Gathiya*, *Phafada* (food stuffs specifically made of floor of Bengal gram deep fried in oil) though having *Desasatmya* (*Compatible place*) could be categorised as '*Paistika*' and *Snigdha* diet and excess consumption was traced in present study. This could be non classical *Hetu*.

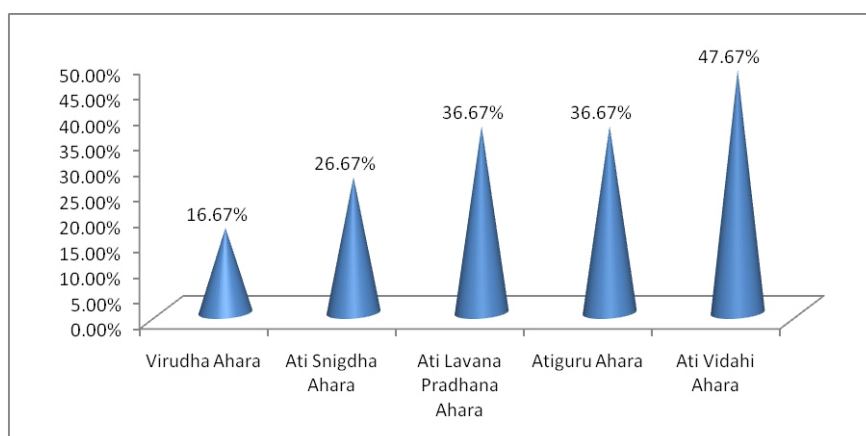
It has been observed that 36.67% of patients were taking *Guru Ahara* and 26.67 % patients were taking *Snigdha* and *Atiabhishyandhi Ahara* each, whereas 46.67% patients were taking *Vidahi Ahara*. Maximum numbers of patients were

having *Guru* and *Snigdha* *Gunakar Ahara*. Long and regular use of above mentioned *Ahara* may lead to high cholesterol level in the blood and may cause atherosclerotic changes in coronary arteries.

In the *Viharaja Nidanas*, 70 % patients were indulging in *Diwaswapna* (*Day Sleeping*), 30% patients did one or the other type of *Vegavidharana*, 26.67 % patients were having *Tamagunadhikya* (*predominantly tamas*) followed by 26.67 % having *Achesta*. *Avyayama* was found in 36.67 % patients. Exercise increases blood circulation, reduces platelet stickiness, increases fibrinolysis, lowers blood lipids and reduces obesity^[28]. A sedentary life style with poor cardiopulmonary fitness is thus more prone to coronary artery disease. *Vegavidharana* (*Suppression of urges*) may cause vitiation of *Apana Vayu* and add to the etiopathogenesis of hypertension. *Atapa* and *Anala Sevana* (Excessive exposure to sun and wind) (20%) was also observed. This may be due to invariable and comprehensive exposure of local public to dry and hot weather of confined area, *Jamnagar* (*Jangala Desha*). Therefore, the *Pitta* can vitiate *Rakta* and cause hypertension.

In *Manasika Nidanas*, *Chinta* 46.67% followed by *Krodha* 26.67% and *Shoka* 23.33% were found. Apart from these *Trasa*, *Bhaya* and *Achinta*^[29] were found to be 13.33%, 6.67% and 6.67% respectively. Periods of stress are associated with increased catecholamine secretion, and sustained stress can lead to rise in Blood pressure^[30]. Thus, mental tension may be a conditioning or an aggravating factor, which, in the presence or absence of other traits predisposes to Hypertension. In the present study, it was also

Graph 2: Aharaja Nidanas as found in 30 patients of hypertension



found that *Chinta* as well as *Achinta* both are enumerated as etiological factors of heart diseases was found in the survey study. *Acharaya Caraka* advocates practising *Chinta* in the cases of *Sthaulya*^[31] (Obesity). Therefore patients having *Santarpanotha* (Diseases due to over nourishment) etiopathogenesis of hypertension can rely on this factor to a certain extent.

Vyasanatah (Frustrations) tea in 60%, tobacco in 36.67% and alcohol in 10% was found as a *Hetu*. The caffeine acutely elevates Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) at rest and during mental and exercise stress. It has been proved that this presser effect is due to the elevation by caffeine of peripheral vascular resistance rather than enhancement of cardiac output^[32]. The ability of caffeine

Table 2: Showing the broad classification of *Nidanas* of Hypertension in Ayurvedic parlance

<i>Santarpana Ahara and Vihara</i>	<i>Apatarpana Ahara and Vihara</i>	<i>Miscellaneous</i>
<i>Ati Amla Bhojana</i> (Lemon, stale buttermilk)	<i>Ruksha Bhojana</i> (Pharsana)	<i>BeejaDosa</i> (Heredity)
<i>Ati Lavana</i> (Salt)	<i>Shushka Bhojana</i> (Consumption of dry food)	<i>Ajeema Bhojana</i> (Consuming food in indigestion)
<i>Madya Pana</i> (Beverages)	<i>Alpa Bhojana</i> (Scanty dietary habit)	<i>Viruddha Bhojana</i> (Milk with fruits, Chapati with Tea, Kichadi with buttermilk)
<i>Ati guru Bhojana</i> (spicy and junk food)	<i>Ati Kashaya Rasa Sevana</i> (Tea, coffee)	<i>Asatmya Bhojana</i> (Incompatible food)
<i>Ati Snigdha Bhojana</i> (oily food)	<i>Ati Tikta Rasa Sevana</i> (Chili)	<i>Gadaatichara</i> (Complication of major illness)
<i>Adhyasana</i> (excessive foodconsumption in terms of frequency)	<i>Ati Kshara</i> (Salt)	<i>Vega Vidharana</i> (<i>Shukra/Hikka/Trishna/Ashru/Shrama a Shwasa/Cchardi</i>)
<i>Ati Vidahi</i> (Fermented and spicy food)	<i>Ati Katu</i> (Excessive spicy food)	
<i>Ati Abhishyandhi</i> (Dadhi, Salt))	<i>Langhana/Upavasa</i> (Fasting)	
<i>Ati Nidra</i> (Somnolence)	<i>Karshanakaraka Ahara</i> (Emaciating food items)	
<i>Achintana</i> (Thoughtlessness)	<i>Avyayaama/Ativyayaama</i> (Leisure/Exertion)	
	<i>Plavana</i> (Swimming)	
	<i>Acheshta</i> (No exercise)	
	<i>Atapa Sevana</i> (Exposure to strong sunlight/heat)	
	<i>Shrama Aadhikya</i> (Exertion)	
	<i>Abhighaata</i> (Mechanical Trauma)	
	<i>Yanadi Deha Vikshobhana</i> (Exertion due to rusty riding)	
	<i>Karshanakara Vihara</i> (Emaciating chores)	
	<i>Chinta</i> (Tension)	
	<i>Bhaya</i> (Fear)	
	<i>Trasa</i> (Mental irritation)	
	<i>Shoka</i> (Displeasure)	
	<i>Krodha</i> (Anger)	

to increase vascular resistance raises the question of its effect in hypertension development. A recent ambulatory study of older men and women reported no difference between normotensive abstainers and coffee drinkers in 24-hour BP. However, in hypertensives, ambulatory BP increased in coffee drinkers and decreased in abstainers regardless of medication status^[33]. Hence it has atherosclerotic effect on blood vessels and acts as an aetiological factor in EHT (Essential hypertension)^[34]. In this new era tea becomes a most common food item that should not be considered as addiction. However, in susceptible persons nicotine and caffeine in higher concentration may work as aetiological factors. Tobacco a poisonous factor having *Vyavayi*, *Vikasi*, *Usna* and *Tiksna* properties^[35], can vitiate *Rakta Dhatu*. Alcohol is also a known *Rakta-Pitta* vitiating factor^[36]. Hence, tobacco and alcohol are the factors which should be listed under the *Nidanas* of hypertension.

Hypertension arising as a complication of other diseases can be taken under the heading of *Gadaatichara*, one of the *Hetus* mentioned in *Hridroga*^[37]. The diseases like *Pakshaghata*, *Hridroga* and *Mutrarogas* have existed at least since the existence of science of Ayurvedic medicine. These diseases exactly belong to *Trimarmas*. This is a fact from modern science that these three *Marmas* get more afflicted by the high blood pressure. Thus, all these can be taken as indirect references concerned with hypertension. In the present study, 4 patients were Diabetic, and a single patient of Ischemic heart disease and Mitral stenosis. Thus, hypertension may have occurred secondary to these diseases.

Considering the etiological factors, they can be broadly classified into *Santarpana* (Atherosclerotic) and *Apatarpana Nidanas* (Arteriosclerotic) and *Beeja Dosha* (Hereditary)

Vyana, *Udana* and *Prana Vayu* has a direct role in the physiology of circulation. Any type of derangement of these can cause the derangement of circulatory system; hence, these *Vayu* are primarily concerned to hypertension. *Samana* and *Apana* types are secondarily important in the manifestation of the hypertension because hypertension is the disease mainly concerned to *Madhyama Rogamarga* (Intermediate bodily site for manifestation of diseases) and *Bahya Rogamarga* (External bodily site for manifestation of diseases) and secondarily to *Koshtha Marga* (Gastro Intestinal Tract). However, the *Karma* of *Samana* and *Apana* is found to be the separation and excretion of *Kleda* (toxins present in plasma) part from the normal fluid which can be correlated with the 'Na' excretion and 'K' retention and thus these two types can be taken for prime importance in the manifestation of the disease^[38].

Conclusion:

Without sustained efforts on individual and national levels, the upcoming hypertension epidemic will exact a devastating price on the region's physical and economic health. Ayurveda recognises that hypertension is a disease associated with hereditary factors, ageing and lifestyle. It

can be caused due to the changes in blood circulation (*Rasa* and *Rakta Samvahana*); however, Ayurveda views the causative factors behind the disorder quite differently due to its perception of the body. Apart from an inherent weakness, today's lifestyle and diet are the main causes of Hypertension, in agreement with modern medical research. Along with all other factors ageing is also the common factor in the provocation of the hypertension, this is because of senile alterations in the structure and physiology concerned to hemodynamics. Other stress related factors are also being incorporated under the triggering factors of hypertension. Excessive salt intake, excessive alcohol intake and smoking are also very much responsible in the etiopathogenesis of hypertension. Observation of the etiological study is liable to give the specific role of *Nidana* in the vitiation of particular *Srotas*. More percentage of etiological factors of *Raktavaha Srotas* (78.46%), *Rasavaha Srotas* (53.33%) was found than that of *Manovaha Srotas* (27.67%) and *Medovaha Srotas* (37.76%). Rationality of *Satkaryavada* accepted by *Carakacharya* got here in to the practice when most of the symptoms from *Rasa* and *Raktavaha Srotas* were reported in the study. The study is limited in various aspects. One of the aspects is short sample size. They don't give a vivid picture of the epidemiology at broader scale. Moreover, the data was collected from the city of Jamnagar, a region of Saurashtra. The general dietetic pattern followed here cannot be applied to the whole country in total. Even then, the avoidance of these *Nidanas* is the first step in the direction of control and management of hypertension.

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Appendix-I

CLINICAL PROFORMA

DEPARTMENT OF RASASHASTRA & BHAISHAJYA KALPANA
I.P.G.T & R.A., GUJARAT AYURVED UNIVERCITY, JAMNAGAR

1. VITAL DATA

Patient name :
Religion :
Age /sex :
Education :
Occupation :
Marital status : M / U M / W / D
Socio.eco.status : P / LM / M / UM / R
O.P.D. /I.P.D. NO. :
Address :
Date :

2. History of Present Illness :

3. History past Illness :

4. Family History : Madhumeha / Medoroga / HTN / Other Pitrij kula Matrij kula.....

5. Personal History : Kshudha --- :Alpa / Madhyam / Ati
Abhyavaran Shakti:--- A / M / P
Kostha:--- Mridu / Madhyam / Krura
Agni:--- Sama / Visham / Tikshna / Manda
Bowel: --- Regular / Irregular / Constipation / Loose
Micturation:Day.....Night
Emotional Makeup: Normal / Jolly / Tensive / Anxiety / Depression

A) Ahara : Samshana / Visamashan / Virudhashana / Adhyashana / Alpashana
Samisha / Niramisha
Regular / Irregular,time/day
Dominant Guna in Diet:--- Guru / Laghu / Sita / Usna / Snigdha / Ruksha
Dominant Rasa in Diet:--- Madhura /Amla / Lavana /Katu /Tikta /Kasaya

B) Vihara :Type & duration of work
Addiction :--- Smoking / Tobacco / Tea / Coffee / Alcohol / Pan / Other
Nidra:---Samyaka / Asamyak
Alpa / Adhika / Khandita,
.....hr/Night.....hr/Day

C) Menstrual History :---Regular / Irregular / Early / Late / Excessive / Less / Normal
Menarche.....yrs
Menopause.....yrs

- D) **Obstetric History** :No. of Deliveries.....
Abortion / Miscarriage /Surgical Intervention
- E) **Sexual History** :Interval of Intercourse
Masturbation

6. Aturbala Pariksha :

- Prakriti :V/P/K/VP/VK/PK/ VPK
Saara : P / M / A
Samhanana : P / M / A
Pramana : Ht.....Wt.....
Satmya : P / M / A
Satva : P /M / A
Ahara sakti : P / M / A
Vyayama sakti : P / M / A
Vaya : Balya /Yuva /Vridhavastha

7. Aturadesha Pariksha :

Samanya Parksha

- Nadi :
Mutra :
Mala :
Jihva :
Shabda :
Sparsha :
Drika :
Akriti :

Genral examination :

- Pulse :.....
B.P :.....
Resp. Rate :.....
Body Temp :.....
Appetite :.....
Bowel :.....
Urine :.....

Nidanas as per classics:

Sr.no.	Nidana	Status
Aharaja		
1.	Ruksha Bhojana	
2.	Shushka Bhojana	
3.	Alpa Bhojana	
4.	Ati Ushna Bhojana	
5.	Ati Amla Bhojana	
6.	Ati Lavana	
7.	Ati Kashaya Rasa Sevana	
8.	Ati Tikta Rasa Sevana	
9.	Ati Kshara	
10.	Ati Katu	
11.	Ajeerna Bhojana	
12.	Madya Pana	
13.	Ati guru Bhojana	
14.	Ati Snigdha Bhojana	
15.	Asatmya Bhojana	
16.	Viruddha Bhojana	
17.	Adhyashana	
18.	Ati Vidahi	
19.	Ati Abhishyandhi	
20.	Langhana/Upavasa	
21.	Karshanakaraka Ahara	
Vihara		
1.	Avyaayama/Ativyayaama	
2.	Plavana	
3.	Acheshta	
4.	Ati Nidra	
5.	Atapa Sevana (in factories heat Brass)	
6.	Shrama Aadhikyaa	
7.	Abhighaata	
8.	Vega Vidharana (Shukra/Hikka/Trishna/Ashru/Shrama Shwasa/Cchardi)	
9.	Yanadi Deha Vikshobhana	
10.	Karshanakara Vihara	
Manasika		
1.	Chinta	
2.	Bhaya	
3.	Trasa	
4.	Shoka	
5.	Krodha	
6.	Achintana	

Miscellaneous:

Gadatichara
Tikshna Virechana
Basti Karma